

Yisha Xiang, Ph.D.

Assistant Professor

Department of Industrial, Manufacturing, and Systems Engineering, Texas Tech University

Email: yisha.xiang@ttu.edu

EDUCATION

Ph.D., Industrial Engineering - University of Arkansas, 2009

M.S., Industrial Engineering - University of Arkansas, 2006

B.S., Industrial Engineering - Nanjing University of Aeronautics & Astronautics, China, 2003

ACADEMIC EXPERIENCE

Assistant Professor of Industrial, Manufacturing, and Systems Engineering, Texas Tech University 9/2018 - present

Assistant Professor of Industrial Engineering, Lamar University 9/2015 - 8/2018

Associate Professor of Management Science, Sun Yat-sen University, China 7/2014 - 7/2015

Assistant Professor of Management Science, Sun Yat-sen University, China 2/2010 - 6/2014

Research Assistant of Industrial Engineering, University of Arkansas 8/2004 - 5/2008

INDUSTRIAL EXPERIENCE

Supply Chain Analyst Global Logistics Department, Halliburton, Houston 6/2008 - 1/2010

RESEARCH GRANTS

Selective Funded Proposals

1. **Xiang, Y.** (PI), "CAREER: Enhancing Environmental and Economic Sustainability of Additive Manufacturing-based Remanufacturing", \$508,805, National Science Foundation, 9/2020 – 8/2025.
2. **Xiang, Y.** (PI), "Data-driven Reliability Analysis and Maintenance Planning for Flow Transmitters", \$11,500, Covestro, 9/2019 – 8/2020.
3. **Xiang, Y.** (PI), "Collaborative Research: Maintenance Planning for Complex Systems in Dynamic Environments", \$279,025, National Science Foundation, 9/2017 – 8/2021.
4. **Xiang, Y.** (PI), "Integrated Framework of Degradation-based Reliability Modeling and Adaptive Maintenance Logistics", \$5000, Research Enhancement Grant, Lamar University, 9/2017 – 8/2018.
5. **Xiang, Y.** (PI) and Zaloom, V. (co-PI), "Reliability and Availability Analysis for Port Equipment", \$25,000, Center for Advances in Port Management, 1/2016 – 7/2017.
6. **Xiang, Y.** (PI), and Xu, D. (co-PI), "Joint Burn-in and Preventive Replacement Optimization for Heterogeneous Populations", 230,000 RMB (\$40,000), National Science Foundation of China, 1/2014 – 12/2016
7. **Xiang, Y.** (PI), and Shi, N. (co-PI), "Medical Resource allocation in the Aftermath of a Natural Disaster", 72,000 RMB (\$12,000), Chinese Ministry of Education, 1/2011 –

PUBLICATIONS

* denotes student author.

Refereed Journal Articles

1. Zhu, Z.* and **Xiang, Y.**, (2020). Condition-based maintenance for multi-component systems: Modeling, structural properties, and algorithms. *IISE Transactions* (in print).
2. Xiao, H., Zhang, Y., **Xiang, Y.**, Peng, R. Optimal design of a linear sliding window system with consideration of performance sharing. *Reliability Engineering & System Safety* (in print).
3. Feng, Q., and **Xiang Y.** (2020), Multi-dimensional Lévy Processes with Lévy Copulas for Multiple Dependent Degradation Processes in Lifetime Analysis. *Quality Engineering* (in print).
4. Xing, L., Zhao, G., Wang, Y. and Xiang, Y. (2019). Reliability modeling of correlated competitions and dependent components with random failure propagation time. *Quality and Reliability Engineering International*, DOI: 10.1002/qre.2609.
5. Shi, Y., **Xiang, Y.**, and Li, M. (2019). Optimal Maintenance Policies for Multi-Level Preventive Maintenance with Complex Effects. *IISE Transactions*, 51(9), 999-1011.
6. Zhu, Z.* , **Xiang, Y.**, Li, M., Zhu, W., Schneider, K. (2019). Preventive Maintenance subject to Equipment Unavailability. *IEEE transactions on Reliability*, 68(3), 1009-1020.
7. Chen, S., Lu, L., **Xiang, Y.**, Sagues, A., and M. Li (2018). A data heterogeneity modeling and quantification approach for field pre-assessment of chloride-induced corrosion in aging infrastructures. *Reliability Engineering and System Safety*, 171, 123-135.
8. Alaswad, S., and **Xiang, Y.** (2017). A review on condition-based maintenance optimization models for stochastically deteriorating system. *Reliability Engineering & System Safety*, 157, 54-63.
9. Zhu, Z.* , **Xiang, Y.**, Coit, D.W., and Feng, M. (2017). Condition-based Maintenance under Performance-based Contracting. *Computers and Industrial Engineering*, 111, 391-402.
10. **Xiang, Y.**, Coit, D. W., and Zhu, Z.* (2016). A Multi-objective Joint Burn-in and Imperfect CBM Model for Degradation-based Heterogeneous Populations. *Quality and Reliability Engineering International*, 32(8), 2739-2750.
11. Shi, Y.* , **Xiang, Y.**, Jin, T., and Li, Y. (2016). Joint planning for spare parts inventory and preventive maintenance in a multi-echelon network. *International Journal of Inventory Research*, 3(3), pp.263-281.
12. **Xiang, Y.**, Zhuang, J. (2016). Medical Resource allocation Serving Victims in Deteriorating Health Conditions in the Aftermath of a Disaster. *Annals of Operations Research*, 236(1), 177-196.
13. Chen N., Ye Z.S., **Xiang, Y.**, and Zhang L. (2015). Condition-Based Maintenance using the Inverse Gaussian Degradation Model, *European Journal of Operational Research*, 243 (1), 190-199.

14. **Xiang, Y.**, Coit, D. W., and Feng, Q. (2014). Accelerated Burn-in and Condition-based Maintenance for n -subpopulations subject to Stochastic Degradation, *IIE Transactions*, 46(10), 1093-1106.
15. **Xiang, Y.**, Cassady, C.R., Jin, T., and Zhang, C.W. (2014). Joint production and maintenance planning with deterioration and random yield. *International Journal of Production Research*, 52 (6), 1644-1657.
16. **Xiang, Y.**, and Rossetti, M. D. (2014). The effect of backlog queue and load-building processing in a multi-echelon inventory network. *Simulation Modeling and Theory Practice*, 43, 54-66.
17. **Xiang, Y.** (2013). Joint Optimization of \bar{X} Control Chart and Preventive Maintenance Policies: A Discrete-Time Markov Chain Approach. *European Journal of Operational Research*, 229(2), 382-390.
18. **Xiang, Y.**, Coit, D. W., and Feng, Q. (2013). n -Subpopulations Experiencing Stochastic Degradation: Reliability Modeling, Burn-in and Preventive Replacement Optimization. *IIE Transactions*, 45 (4), 391-408 (**Top 3 most popular paper** published in 2013, complimentary open-access awarded).
19. **Xiang, Y.**, Cassady, C. R., and Pohl, E. A. (2012). Optimal maintenance policies for systems subject to a Markovian operating environment. *Computers & Industrial Engineering*, 62(1), 190-197.

Completed Working Papers

1. Zhu, Z.*, **Xiang, Y.**, Zeng, B. Multi-component Maintenance Optimization: A Stochastic Programming Approach. *INFORMS Journal of Computing*. (2nd Revision Submitted)
2. Shi, Y.*, **Xiang, Y.**, Xiao, H., Xing, L. Joint Optimization of Budget Allocation and Maintenance Planning for Deteriorating Transportation Infrastructure with Multiple Facilities. *European Journal of Operational Research*. (1st Revision Submitted)
3. Liao, Y.*, **Xiang, Y.**, Wang, M. Health Assessment and Prognostics Based on Higher Order Hidden Semi-Markov Models. *Naval Research Logistics*. (Under 1st Round Revision)
4. Shi, Y.*, **Xiang, Y.**, Liao, Y.*, Zhu, Z.*, Hong, Y. Optimal Burn-in Policies for Multiple Dependent Degradation Processes. *IIE transactions*. (Under 1st Round Revision)
5. Shi, Y.*, **Xiang, Y.**, Zhu, W. A condition-based predictive maintenance optimization for multi-component systems subject to a system reliability requirement. *Reliability Engineering & System Safety*. (Under 3rd Round Revision)
6. Xiao, H., Lin, C., **Xiang, Y.**, Peng, R. Optimizing Dynamic Performance of Phased-mission Systems with a Common Bus and Warm Standby Elements. *IEEE Transactions on Systems, Man, and Cybernetics*. (Under Review)

Refereed Conference Proceedings Publications

1. Liao, Y., **Xiang, Y.**, and Keedy, E. (2020). Reliability Analysis of Flow Meters with Multiple Failure Modes in the Process Industry. In *Proceedings of Annual Reliability and Maintainability Symposium*. Palm Springs, CA, USA.

2. Shi, Y., **Xiang, Y.**, and Jin, T. (2019). Structured Maintenance Policies for Deteriorating Transportation Infrastructures: Combination of Maintenance Types. In *Proceedings of Annual Reliability and Maintainability Symposium*. Orlando, FL, USA. (**Society of Reliability Engineering Doug Ogden Best Paper Award**)
3. Wari, E., Zhu, W. and **Xiang, Y.** (2017). A Constraint Programming Model for Ice Cream Processing. In *Proceedings of IISE Annual Conference and Exposition*, Pittsburgh, PA, USA. (**2017 IISE Best Track Paper Award, Production Planning & Scheduling Track**)
4. Zhu, Z., **Xiang, Y.**, Alaswad, S., and Cassady, C. R. (2017). A Sequential Inspection and Replacement Policy for Degradation-based Systems. In *Proceedings of Annual Reliability and Maintainability Symposium*, Orlando, FL, USA. (**Society of Reliability Engineering Oftshun Best Paper Award**)
5. Jin, T., **Xiang, Y.**, and Cassady, C. R. (2013). Understanding Operational Availability in Performance- Based Logistics and Maintenance Services. In *Proceedings of Annual Reliability and Maintainability Symposium*, Colorado Springs, CO, USA, pp. 1-6. (**Society of Reliability Engineering Oftshun Best Paper Award, R.A. Evans/P.K. McElroy Best Conference Paper Award**).

PRESENTATIONS (Seminars and Conferences)

1. Liao, Y., **Xiang, Y.**, and Keedy, E. (2020). Reliability Analysis of Flow Meters with Multiple Failure Modes in the Process Industry. In *Proceedings of Annual Reliability and Maintainability Symposium*. Palm Springs, CA, USA.
2. Zhu, Z., **Xiang, Y.**, and Zeng B. (2018). Condition-based Maintenance Optimization for Multi-component Systems: A Stochastic Programming Approach. INFORMS. Phoenix, AZ.
3. Shi, Y., and **Xiang, Y.** (2018). Joint Optimization of Resource Allocation and Maintenance Planning for a Multi-Facility Infrastructure System. INFORMS. Phoenix, AZ.
4. **Xiang, Y.** (2016). An Introduction to Preventive Maintenance Models. Schlumberger Engineering Colloquium, Rosharon, TX.
5. **Xiang, Y.** (2016). Condition-based Maintenance under Performance-based Contracting. Department of Industrial Engineering. University of Houston, Houston, TX.
6. **Xiang, Y.** (2014). Reliability Modeling and Preventive Maintenance for Mixed Populations. Department of Industrial & System Engineering and Engineering Management, Huntsville, AL.
7. **Xiang, Y.** (2014). Logistics and Supply Chain Simulation and Optimization. Department of Information and Logistics Technology, University of Houston, Houston, TX.
8. **Xiang, Y.** (2013). Joint Optimal Burn-in and Replacement Policy for Heterogeneous Populations. Department of Industrial Engineering, University of Houston, Houston, TX.
9. **Xiang, Y.** (2012). Condition-based Maintenance of Degrading Systems. Department of Mechanical and Industrial Engineering, Northwestern Polytechnic University, Xi'an, Shanxi, China.

TEACHING AND ADVISING

Courses Taught (U=Undergraduate, G= Graduate)

Courses at Texas Tech University

- (G) Decision Making under Uncertainty (Spring 2020)
- (G) Stochastic Processes (Fall 2019)
- (G) Maintenance Modeling and Optimization (Spring 2019)

Courses at Lamar University

- (U) Production Inventory & Control (Fall 2015, Summer 2017, Fall 2017)
- (U) Operations Research (Spring 2016, Spring 2017)
- (U) Reliability and Maintenance Operations (Fall 2016, Fall 2017)

- (G) Reliability (Fall 2015, Fall 2016)
- (G) Repairable System Modeling (Spring 2016, Spring 2017)

Courses at Sun Yat-sen University

- (U) Production Planning & Control (Spring 2010, Fall 2013)
- (U) Business Statistics (Spring 2013, Spring 2014, Fall 2014)
- (U) Operations Management (Spring 2010, Spring 2011, Spring 2013, Spring 2015)

- (G) Special Studies (Topics in Reliability Engineering) (Fall 2010, Fall 2013)
- (G) Special Studies (Topics in Six Sigma and Quality Management) (Fall 2011)
- (G) Operations Research (Fall 2012, Fall 2013, Fall 2014)

Doctoral Student Advising

- Texas Tech University
 1. Zhicheng Zhu (chair)
 2. Yue Shi (chair)
 3. Ying Liao (chair)
 4. Eric Bediako (chair)
 5. Will Wascom (chair)

SELECTED AWARDS/HONORS

- National Science Foundation CAREER award, 2020
- Best Paper Award, International Conference on Quality, Reliability, Risk, Maintenance, and Safety Engineering, Zhangjiajie, China, 2019
- Doug Ogden Best Paper Award, Society of Reliability Engineering (SRE), Reliability and Maintainability Symposium, 2019
- Best Track Paper Award, Production and Scheduling Track, IISE Conference, 2017
- Most Helpful Professor from the LU IIE Student Chapter, 2017
- Stan Oftshun Best Paper Award, Society of Reliability Engineering (SRE), Reliability and Maintainability Symposium, 2013, 2017
- Ralph A. Evans/P.K. McElroy Best Paper Award, Reliability and Maintainability Symposium, 2013

- Outstanding Graduate Student, University of Arkansas, 2007

PROFESSIONAL SERVICE

Professional Society Service

- Associate editor, IEEE Transactions on Automation Science and Engineering, 2020-present
- Technical program committee of the 10th Prognostics and Systems Health Management conference, PHM-2019
- Best Student Paper Award Committee Member for the IISE Quality Control and Reliability Engineering Track, 2012, 2017, 2020
- Best Student Paper Award Committee Member for the INFORMS Quality, Statistics and Reliability Society, 2016
- Chair of the Annual INFORMS Meeting, 2014, 2015, 2016, 2017, 2018, 2019, 2020
- Reviewer for Natural Science and Engineering Research Council of Canada, 2016
- Reviewer for National Natural Science Foundation of China, 2015, 2016
- Quality and Reliability Technical committee for ASME, 2016
- Program committee of the 11th International Conference on Reliability, Maintainability and Safety, Hangzhou, China, 2016
- Chair of the Ninth International Conference on Mathematical Methods in Reliability, Tokyo, Japan, 2015
- Co-chair of the World Conference of Engineering Asset Management, Hong Kong, 2013
- Committee of the Chinese Reliability Society, 2013- 2015

Ad-Hoc Referee

- Applied Mathematical Modelling
- Communications in Statistics – Theory and Methods
- Computers & Operations Research
- European Journal of Operational Research
- IISE Transactions
- IEEE Transactions on Reliability
- IEEE Transactions on Systems, Man, and Cybernetics
- Journal of Applied Statistics
- Journal of Manufacturing Systems
- Journal of Risk and Reliability
- Production and Operations Management
- Quality and Reliability Engineering International
- Reliability Engineering and Safety Science

PROFESSIONAL AFFILIATIONS

Member of IISE, INFORMS